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Infinitivals and the Transparency Principle Revisited

Eithne Guilfoyle
University of Calgary

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0. Introduction

The categorial status of infinitival verb forms in Old English (OE) has often been the subject of controversy. The discussion has focused on whether OE infinitivals are verbs or nouns, and much of the debate has hinged on the significance of the lack of infinitival clauses with lexical subjects in OE, as compared with Late Middle English (LME) and Modern English (e.g. Callaway 1913, Fischer 1988, Lightfoot 1979, 1991). We suggest here, that the OE infinitival was a verbal noun(VN). This proposal is similar to that of Lightfoot (1979) who argues that OE infinitivals were nouns, and thus could not have a 'true subject.' We argue that these VNs were reanalyzed as true verbs during the Middle English (ME) period. However, our analysis differs from that of Lightfoot (1979) in a number of important respects. First, our claim that the OE infinitival is a VN is rooted in the assumption that universally the underlying structure of VP is a VP shell structure (Larson 1988) and that the lower VP is headed by a VN (Travis 1991, Guilfoyle 1993). We assume that the specifier of the upper VP is the only position to which a true external argument may be assigned. Second, we claim that the shift from VNP to VP was motivated by a universal principle which prohibits the generation of empty structure.

In section 1 we show that lexical NPs do not appear in nonfinite clauses until the LME period. In section 2 we discuss a number of explanations that have been offered for the phenomenon. The theoretical framework within which we cast our analysis is

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section 3. In sections 4 and 5 we discuss the loss of verbal inflection during the ME period. We also show that OE nonfinite clauses lacked an external argument position and therefore could not have any syntactic subject, lexical or nonlexical. Section 6 discusses the role of verbal inflection in the change in the internal structure of the VP, and the eventual emergence of ECM. Finally, we summarize our findings in section 7.

1. The Problem

In general, Modern English does not allow lexical NPs to appear in the subject position of nonfinite clauses as can be seen in (1):

(1) a. *I hope **Susan** to leave
b. ***Susan** to leave

However, lexical subjects can appear in a nonfinite clause that acts as the complement to causative and perception verbs, or when it is preceded by the complementizer *for* as shown in (2) and (3) below:

(2) a. I made **Susan** leave
b. I saw **Susan** leave

(3) a. It would be a shame for **Susan** to leave now
b. For **Susan** to leave now would upset Peter

A lexical subject may also appear when the clause acts as the complement to a restricted class of verbs, known in the literature as exceptional case-marking (ECM) verbs:

(4) a. I expect **Susan** to leave
b. I consider **Susan** to be a genius

Lexical subjects could appear in the infinitival complements of causative and perception verbs at all stages of the language. Examples from OE and ME are shown in (5) below.[1]

(5) Old English
& leot him locon [**þa gewrite** þe ær wæron gefunden]
and caused him look-at the writings that earlier were found-INF
'and made him look at the writs which had been found' (ChronE 116.10 (983))

(6) Middle English
whanne ȝe seon [**þese dredful tokenes** biginne to come]
'when you see these dreadful tokens begin to appear' (c1400 Loll. Serm 2.674)

There are however, no OE equivalents to the examples in (3) or (4). ECM constructions, and constructions with the *for* complementizer emerged in ME Lightfoot (1979). An example of an early ECM structure is shown in (7).

(7) yif that any wyght wene **a thing** to ben ootherweyes than it is
if that any creature think a thing to be otherwise than it is
'If any creature thinks something to be otherwise than it is'
((c.1380) Chaucer, Bo. 5.pr3.99)

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[1] The infinitivals in these structures were never preceded by *to*. See Lightfoot (1991) for discussion.

In this paper we will not consider emergence of the *for* complementizer. However, we will attempt to address the following questions with respect to the emergence of ECM verbs:

(i) How and why did ECM emerge in ME ?
(ii) Is there a relationship between the emergence of ECM verbs in Middle English, and other changes taking place in the language during that period?
(iii) What role does the emergence of *to* as an obligatory infinitival marker play in the emergence of ECM?

These questions have been addressed several times in the generative and traditional literatures, and we review some of them in Section 2 below.

2. Earlier Accounts of the Emergence of ECM

2.0. Introduction

During the period 1100 to 1400, English underwent significant changes at all levels of the grammar. At the lexical level, the language underwent borrowing, first from Latin, and later, from French. At the syntactic level, the word order shifted from being a language exhibiting SOV order in embedded clauses and V2 order in matrix clauses, to a language which allowed SVO order in both matrix and embedded clauses. At the morphological level, most of the rich verbal agreement morphology was lost, and the infinitive marker *to* came to be used obligatorily in most contexts. All of these factors have been implicated as giving rise directly or indirectly to the emergence of ECM structures. We consider some of these analyses below.

2.1 Nongenerative Explanations

Latin and English were in contact throughout the OE and ME period because Latin was the language used for education, religion, and the legal system. Latin allows infinitival subjects and so could have been the source for ECM in ME. The first examples of ECM structures in ME, are drawn primarily from one poem closely based on its Latin model:

(8) Ghe wiste of water **it** boren ben
she knew from water it born be
'She knew it (the child Moses) to have been born from water'
((c1250) Gen. & Ex. 2632))

However, as Denison (1993:174) points out, the data from this poem is likely to be a direct translation of its Latin original, rather than an accurate reflection of contemporary English. It appears more than 100 years before we find other examples of ECM structures in the ME literature. Consequently it is not convincing as true example of ECM. A more typical example of early ECM is the ME example shown in (7) above from about the end of the 14th century.

We have other reasons to be skeptical of the claim that ECM emerged through borrowing from Latin. First, it is unclear how the contact situation between English and Latin could have provided sufficient access to the average ME learner to allow the necessary parameter resetting. Second, Latin freely allows subjects to appear in infinitival clauses, they are not dependent on any governing element in a higher clause. In which case we might ask why English would restrict the appearance of lexical subjects in nonfinite clauses to the complements of a particular group of verb. Finally, ECM has not

developed in any of the modern Romance languages, which would be somewhat surprising if Latin is the source of the construction in English.[2]

As we saw above causative and perception verbs always allow lexical subjects to appear in their complements. Several researchers have proposed that English developed ECM by analogy with these verbs. Again, we can be skeptical of this explanation because it fails to explain the timing of the emergence of ECM. Why did this happen in ME rather than in OE? What was so special about the circumstances that arose in LME to facilitate the analogical process?

2.2 Generative Explanations

2.2.1 Category Shift and the Transparency Principle

Lightfoot (1979) argues that OE infinitivals are nouns that underwent a shift in category during the ME period. He presents several diagnostics for nounhood originally suggested by Visser (1963) in a discussion of the OE gerund. Under these criterion OE nonfinite clauses were headed by an NP. The major difference between the nominal infinitival and other argument taking nouns is that the infinitival could not take a subject, i.e. it is an NP which lacked a specifier. Because of various phonological changes that were taking place in the language, the infinitive's nominal morphology was lost during ME, and as a result the child acquiring the language no longer had evidence for representing the infinitive as a noun. In terms of Lightfoot's theory of category change (The Transparency Principle) the difference between infinitival forms and other verbal forms in the language was no longer transparent, so that the language learners assigned both finite and nonfinite verbs to the same category i.e. they analyzed both forms as verbs. Now the way was clear to allow the infinitivals to take subjects, and ECM emerged.

At this point we might consider some of the problems an analysis such as this faced at the time it was proposed. As pointed out by Lightfoot himself (Lightfoot 1991), in terms of category features, the shift from a [+N-V] to [-N, +V] is a very radical shift, and this somewhat detracts from its plausibility as an explanation of the change. Second, it is not clear what the motivation for such a shift in category could be. We will adopt an analysis quite similar to that of Lightfoot (1979), but using some recent proposals on the structure of VP we will avoid the above mentioned problems.

2.2.2 Word Order change as Motivation for the emergence of ECM

Two more recent analyses link the emergence of ECM with word order change. The first, that of Fischer (1988) links its emergence in LME to the loss of SOV order in nonfinite clauses. The second, Lightfoot (1991) builds on her analysis, but also insists that there is a relationship between the emergence of ECM and the introduction of obligatory *to*. We discuss both of these analyses below, arguing that the shift from SOV order to SVO is an implausible trigger.

2.2.2.1 Fischer 1988

The word order of embedded clauses shifted from SOV to SVO during the late OE period, and was complete by around 1200. According to Fischer, this shift in word order was the main cause of the introduction of ECM. This new order created a sort of

[2] Ann Rochette informs me (personal communication) that there was a type of ECM construction in early French for a short period. To this point, I have not had the opportunity to explore this further.

ambiguity that allowed ECM to develop.[3] To see this, consider the sentences in (9) below:

(9) a. Intransitive Clause
þa het he[**hi** bidan on þaem ealande]
then ordered he them-ACC wait-INF on the island
'Then he ordered them to wait on the island' (Bede 1 14.58.8)

b. Transitive Clause
Moyses forbead... [þa nytenu to etanne]
Moses forbade the animals to eat
'Moses forbade anyone to eat the animals' (AELS II 25.40)

In (9b) *þa nytenu* is most naturally interpreted as an the object because of the SOV underlying order. It would thus have a representation like that shown in (10):

(10) Moyses forbead... [PRO þa nytenu to etanne]

After the shift to SVO order *þa nytenu* would tend to be interpreted as a subject, and the sentence in (9b) would receive the interpretation 'Moses forbade the animals to eat anything.' After this occurred, in order to get the object interpretation a passive infinitival form was used.

Dennison (1993) points out a number of problems for this analysis. First, the rise of ECM in fact took place two hundred years after SVO was already well established. It remains unexplained why there was such a large time lag between the loss of SVO and the emergence of ECM. Second, when ECM emerged (after 1400) the NP before the nonfinite verb could only be interpreted as a subject, not an object. In which case we might ask how any could ambiguity arise. Finally, ambiguity only arises when we have verbs that allow a transitive or intransitive interpretation (e.g. *eat*). It seems unlikely that these verbs would be sufficiently frequent in the input to force the learners to posit an ECM structure to account for them.[4] The reliance on ambiguity becomes particularly troublesome, when we note that the first ECM structures favoured intransitive verbs. We need an analysis of ECM which provides an explanation for this fact. At the very least, this suggests that ambiguity was not a significant factor.

2.2.2.2 Lightfoot (1990)

Lightfoot assumes the ambiguity explanation presented in Fischer (1988), and proposes in addition, that the rise of *to* as an infinitival marker was crucial in the development of ECM. His explanation relies on a fairly technical notion of head-government and coalescence, where he argues that *to* could 'coalesce' with the higher verb allowing it to transmit government and case to the lower clause subject. Until *to* became the marker of infinitivals in the language no lexical subject could appear in the lower clause. We will not adopt Lightfoot's analysis because of the reliance on ambiguity as a trigger, for the reasons discussed above. However we will also suggest that the role of *to* is crucial in the emergence of ECM.

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[3] This discussion of Fischer (1988) owes much to Denison (1993:209-212)

[4] It should be pointed out however, that the problem of the relationship between frequency in the input and parameter setting has plagued acquisitionist for years.

2.3 Summary of Changes

A this point it might be useful to briefly review the changes that took place during the period of ME that might have influenced the emergence of ECM during the period. These are shown in (11) below:

(11) **Approximate Timeline of Relevant Changes**

	Change	Emerging	Completed
(a)	Borrowing between Latin and English	700 →	
(b)	Loss of Verbal Morphology	1100	1500
(c)	V2 → SVO	1100	1400
(d)	*to* required before infinitival forms		1400
(e)	Introduction of ECM	1400 →	

We argue below that the emergence of ECM is indirectly related to (b) and (d) above, and that our analysis of this change is consistent with current findings in the syntactic and acquisition literature.

3. Theoretical Assumptions

Three recent proposals concerning phrase structure will be adopted in our analysis:

(a) VP is segmental consisting of two sections, an upper VP and a lower VNP. The lower VNP may surface alone in nonfinite clauses in some languages.

(b) Languages may have strong or weak agreement features. Strong agreement is correlated with overt V-movement, and independent projections. Weak agreement is correlated with covert V-movement and dependent projections.

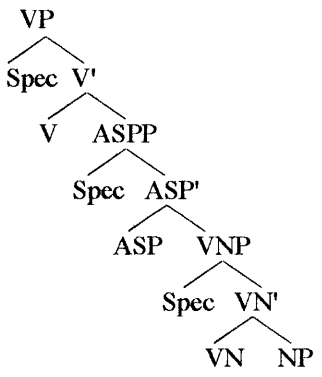
(c) There is a principle of economy of projection which prohibits the generation of empty structure.

Each of these are discussed below.

3.1 The internal structure of VP

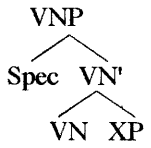
Drawing on work by Larson (1988), Travis (1991) proposes that the VP consists of two segments each of which discharges an argument within its own projection. Following Hale and Keyser (1992) she assumes that the lower VP is headed by a VN. Under certain circumstances objects move to a VP internal AspP to receive accusative case. Thus the internal structure of VP is as in (12) below:

(12)



In (12) each segment of the VP discharges an argument to its spec position. The upper VP is responsible for discharging the external argument, while the lower VNP discharges the internal argument(s). In Guilfoyle (1993), I argue that nonfinite clauses in some languages lack the upper VP. When this occurs we find that the nonfinite clauses place strong restrictions on the appearance of subjects, because the external argument cannot be associated with the syntactic position spec of VP. I presented evidence that Irish nonfinite clauses are headed by a 'verbal-noun' which has shares morphological and case-assigning features with other nouns in the language. I also showed that Southern Irish nonfinite clauses permit only one lexical argument to appear in nonfinite clauses. Thus, there are no nonfinite transitive clauses in the dialect where both the subject and the object are phonetically realized. While infinitival clauses in Modern English have the representation shown in (12), Southern Irish infinitival clauses have the structure shown in (13):

(13)



In Section 5 we will argue that OE nonfinite clauses also lack an upper VP, and that the changes taking place in ME forced the child to project an upper VP, where none was present in the earlier stages. We will argue that this change was brought about as an indirect consequence of the loss of verbal inflection. We turn now to the role of inflection in phrase-structure and verb-movement.

3.2 Verb-Movement, Inflection and Projection

Chomsky (1993) suggests that nature of agreement affixes has an effect on the level at which V-movement must take place. Strong Agreement features on the verb forces verb movement by Spell-out, while Weak Agreement allows movement to take place at LF. We might then ask how we can characterize Strong Vs Weak Agreement? Clearly it is not enough to have some agreement morphology, as Modern English has third person -s, and yet does not allow overt V-movement. Rohrbacher (1994), comparing several different Germanic languages, arrives at the conclusion that an agreement system can be characterized as a Strong Agreement system if it distinguishes between 1st and 2nd Person and all other elements in the paradigm INCLUDING THE NONFINITE VERB FORMS. All other agreement systems constitute Weak Agreement systems. This is presented in the Paradigm-Verb Raising Correlate II:

(14) **The Paradigm-Verb Raising Correlate II**
A language has V to I raising iff in at least one number of one tense of the regular verbs, the person features [1st] and [2nd] are both distinctively marked.

Distinctive marking is defined as in (15):

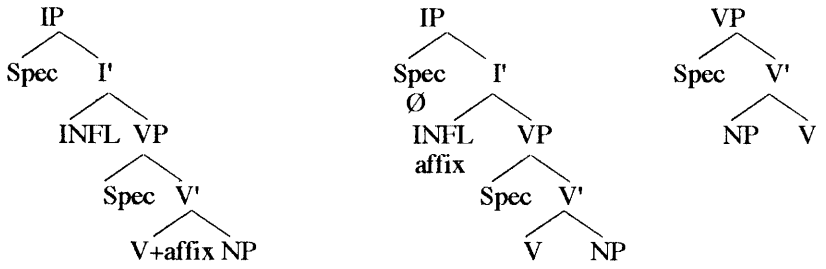
(15) A privative features such as [1st] or [2nd] is distinctively marked if and only if the forms bearing this feature are distinct from the forms lacking this feature.

These two generalizations have interesting acquisition implications. Taken together they suggest that children will receive a significant amount of information about the presence or absence of V-movement in the target language depending on the richness of the verbal morphology. Children should be particularly sensitive to the 1st and 2nd person agreement marking, and in a language with overt V-movement there should be a correlation between the emergence of distinct 1st and 2nd person agreement and overt V-movement.

Rohrbacher also claims that only strong morphemes head their own independent projections while weak morphemes are generated directly on the verb. AGR will head its own projection in a language which has strong agreement morphology. AGR is generated on the verb in a language which has weak agreement morphology. We are thus lead to the following correlation stated in (16), and crosslinguistically INFL can be received the representations shown in (17).

(16) Strong morphemes have individual lexical entries
Weak morphemes don't have individual lexical entries. (Rohrbacher 1994)

(17) a. Weak agreement b. Strong Agreement c. No agreement



In Section 6 below we argue that the loss of agreement morphology resulted in a change in the structure assigned to nonfinite VPs by the children acquiring LME.

3.3 The Economy of Projection

Speas (1993) proposes that there is a principle of economy which prohibits the generation of empty structure.[5] This is formalized as in (18).

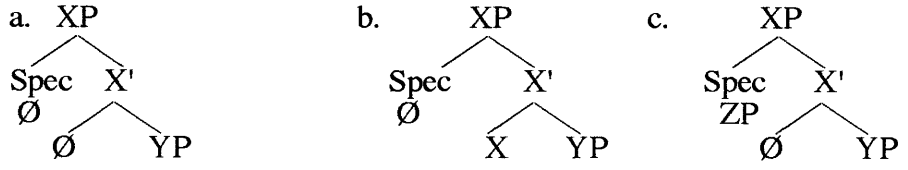
(18) Project XP only if XP has content (Speas 1993: 14).

A node has content if it meets the criteria given in (19):

(19) A node X has content iff X dominates a distinct phonological matrix or a distinct semantic matrix (Speas 1993:15).

Under this principle either a head or a specifier of the phrase must be filled at D-structure, or the structure will violate (18). Thus the structure shown in (20a) is prohibited, while those in (20b) and (20c) are acceptable:

(20)



This principle of economy is well motivated within current models of syntax and has strong implications for language acquisition. In particular a child operating under the principle given in (18) will only assume that an inflectional element heads an independent projection when forced to do so by the input data. While Rohrbacher's generalization suggests that V-movement cannot be acquired before agreement, the principle of

[5] This principle has been expressed in different ways in the literature e.g. Grimshaw (1993) makes proposes a similar constraint within framework of Optimality Theory.

economy of projection suggests that the child cannot acquire a projection before some element is available to fill that projection.[6]

4. The Loss of Inflection and the Emergence of ECM

Throughout the ME period the verbal paradigm was being eroded due to independent phonological changes. These changes have important implications for the internal structure of VP. Consider the data from Old and ME shown in (21) below:

(21)

Old English
sing-an Indicative present

	SG	PL
1st	sing-e	sing-aþ
2nd	sing-est	sing-aþ
3rd	sing-eþ	sing-aþ

Middle English
sing-en Indicative present

	SG	PL
1st	sing-e	sing-en
2nd	sing-est	sing-en
3rd	sing-eþ	sing-en

Using the criteria outlined in 3.2 above both Old and ME are strong agreement languages. The verbal agreement distinguishes between 1st and 2nd person agreement, and we would predict that V to I would take place. EModE presents quite a different picture. An example of the paradigm is resented in (22) below:

(22) **Early Modern English**
cast-ø Indicative present

	SG	PL
1st	cast-ø	cast (-e)
2nd	cast-est	cast (-e)
3rd	cast-eþ	cast (-e)

As we can see from (22), the difference between the infinitival form and the 1st person singular had collapsed by EModE. For INFL to receive an Independent Projection it is crucial that the paradigm distinguish between the 1st person and 2nd person from all other verb forms including the infinitival form. Under Rohrbacher's theory then, by EModE, INFL is no longer an independent projection, and V-movement fails to take place.

As mentioned earlier, there is evidence that in some languages infinitival verbs lack an upper VP. I will suggest below that this case can be made for OE infinitivals. If we assume that the OE infinitival was a VNP, we can explain a number of morphological and syntactic properties of these clauses. Furthermore the shift from ME to EModE involved the shift from a bare VNP in infinitivals to a representation involving a full VP projection. This shift in representation paved the way for the introduction of ECM structures in LME.

5.0 The Categorial Status of the Infinitive in Old English

The evidence for treating the OE infinitival form as a nominal comes from the morphology and the syntax of the language. We will consider the morphology first. OE verbs had two active infinitival forms. The first type, shown in (23a), consists of a bare infinitival form, the second type, shown in (23b), consists of an infinitival form preceded by the preposition *to*.

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[6] This has obvious implications for the debate over the status of functional categories in child grammars, and suggests why there might be such widespread differences crosslinguistically in the age at which children acquire these elements.

(23)	a.	hieran	'to hear'	singan	'to sing'
	b.	to hierenne	'to hear'	to singenne	'to sing'

An example of a sentence containing a bare infinitival, and one containing a *to* infinitival is provided in (24):

(24) a. He sæde þæt he... wolde fandian hu longe þæt land norþryhte læge
He said that he... wanted to-find-out how long that land northwards lay
'He said the he wanted to find out how far northwards that land lay'
(Or. 1 1.17.7)

b. ...ne þe bab beid þearf be lærde to wyrcanne þæt þæt ðu worhtest
...nor thee no need not taught to perform that that thou performed
'...nor did any need teach you to perform what you performed'
(Bo 33.79.16)

Both of these infinitival forms are descendants of a Germanic nominal form, and they retain the nominal morphology (Callaway 1913, Wright and Wright 1925). The -an bare form is 'the petrified nominative-accusative case of a neuter verbal noun' (Callaway 1913:387), while the -enne appearing with the to form is a dative case ending. All verbs could appear in either form, and the choice of when a particular form was used is not clear. Mitchell (1985) suggests that there is no difference in meaning between these two forms, though some verbs restrict their complements to one form rather than another. For instance, only bare infinitivals could follow causative and perception verbs. In many instances however, the choice appears to be random. The *to* infinitival form replaced the bare form in most contexts during the LME period.[7]

The case for treating the OE infinitival as a nominal form is also supported by some interesting 'gaps' in the syntax of OE when we compare it with Modern English. As pointed out by Dennison (1993), OE lacked clear instances of subject control. Under the assumption that both finite and nonfinite verbs have subject position this is a rather strange fact. If however the nonfinite verb lacked a syntactic position to which PRO could be assigned, then we have an explanation for why "OE nonlexical subjects were vague or recoverable from context" (Dennison 1993). OE also lacked Raising Verbs. This "gap" too, is explainable if there is no plausible position within the nonfinite VP to which a theta-role could be assigned.

6. The Shift from VNP to VP and the Emergence of ECM

6.0 Introduction

We have claimed that the OE infinitival was a VNP, while that of LME was a full VP. This means that the child assigned a bare VNP representation like that shown in (13) to OE infinitival clauses rather than the full VP representation shown in (12). On what basis would they have made that decision? If we assume that the child has knowledge of the principle of economy, then they will posit that a clause has a bipartite structure only if they receive evidence that the head and/or the spec of the upper VP is filled. Were they to posit the bipartite structure of (12) in the absence of such positive evidence the upper projection would be radically empty. Such a structure violates UG. Note that crosslinguistically, tensed clauses will always provide positive evidence for the upper VP projection, because it will always be clear that the projection has content. This evidence

[7] See Fischer (to appear) for an interesting account of the distribution of the two types of infinitivals in Late Middle English. She argues that to infinitivals could be used only when the two clauses involved two distinct events.

could come in several forms e.g. the presence of an external argument NP, the presence of subject agreement, [8] or a lexical element in the head of the upper projection.

In the following sections we suggest that the structure of nonfinite clauses underwent a radical change in LME as a consequence of the loss of inflection, and that the emergence of *to* infinitivals was the result of the principle which prohibits the projection of empty structure.

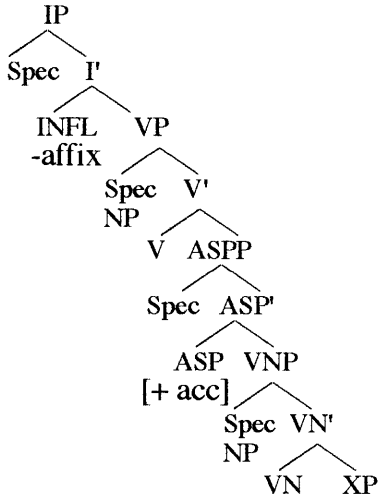
6.1 Acquisition of Old English/Early Middle English

Using input data such as that in (21) the child acquiring OE or early ME will have positive evidence that they are acquiring a Strong Agreement language, that INFL elements head their own projection, and that the verb must move to ensure that the agreement affix is attached to V at S-Structure. This leads the child to postulate the structure in (25a) for finite clauses. The upper VP is projected because the specifier is always occupied by an external argument.

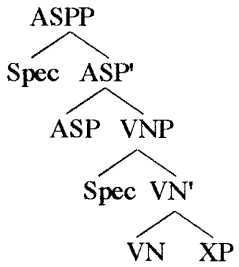
Nonfinite clauses will be assigned the structure in (25b). In this structure the upper VP is not projected because the input does not provide any evidence for the syntactic realization of an external argument. Nonfinite clauses do not show tense or agreement morphology. Rather the verb bears nominal morphology. Lexical subjects are never present.[9] In other words, if an upper VP were generated, both the specifier and the head of the upper VP would be empty, and this would violate the principle of economy in (18).

(25) **Middle English Clause Structure**

a. Finite Clause



b. NonFinite Clause



[8] Note that the relationship between subject agreement and the presence of an external argument is not one to one, or we would have no account of the acquisition of unaccusative verbs which show subject agreement with their single internal argument.

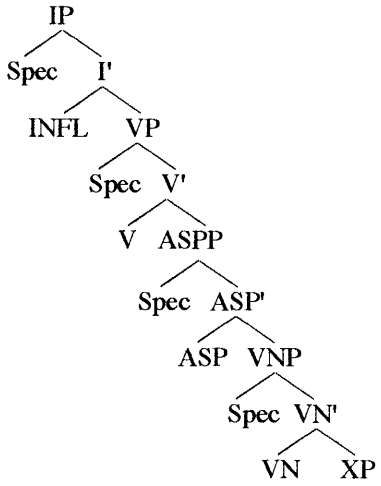
[9] An important exception to this statement is the nonfinite complements of causative and perception verbs. However these clauses place certain restrictions on the realization arguments. See Guilfoyle (1993) for discussion.

6.2 The Acquisition of Late Middle English/Early Modern English

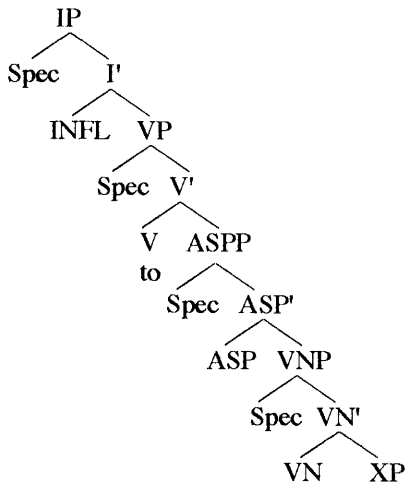
The situation is quite different for the child learning LME/EModE which we assume has the structure shown in (26):

(26) **Early Modern English Clause Structure**

a. Finite Clause



b. Nonfinite Clause



Using input data such as that shown in (22) the child has positive evidence that the language of the input is a Weak agreement language. Consequently AGR elements are generated as affixes on the verb, and V movement does not take place as the affixes are already attached at D-Structure. The child will use the fact that 1st and 2nd person are no longer distinct from the infinitival to determine this. The child will then posit the clause structures shown in (26) for finite and nonfinite clauses respectively.

The finite structure in (26a), like that of (25a), involves both an upper and a lower VP. Again, as this is a tensed clause, the child will have ample evidence in the input that an external argument is always assigned, and that the upper VP must be generated to accommodate this argument. Note however that the nonfinite clause in (26b) also has an upper VP. We attribute this change to be an indirect effect of the loss of inflectional morphology which caused the form differences between the finite and nonfinite forms to collapse.

In the LME data in (22) we see that *cast-ϕ* is now the form for both 1sg and the infinitive. The child has no morphological evidence to distinguish between finite and nonfinite forms. Finite forms are always associated with a lexical subject, so that there is evidence that an external argument can be assigned. Nonfinite forms on the other hand are NEVER accompanied by an external argument. On the assumption that the child attempts to match forms to structure and assign both forms the same representation, the child must either assume that there is a null subject in nonfinite clauses (a full VP structure) or that there is no external argument position in finite clauses (a bare VNP structure). The input will provide ample counterevidence to the latter hypothesis, so that the child will assume that an upper VP is projected in both finite and nonfinite clauses.

The projection of the upper VP in nonfinite clauses has the potential to lead to a violation of the principle of the Economy of Projection, because there is no direct positive evidence in the input that the head or specifier of the upper VP is filled. At this point we find that *to* becomes obligatorily used with the infinitival verb form. We suggest that *to* is generated in the head of the upper VP, to avoid a violation of the principle of economy of

projection. Once the upper VP is generated its specifier becomes available for occupation by external arguments, and we see the first examples of ECM emerging. In support of this claim we note that other syntactic phenomena which rely on the presence of a syntactic position for the external argument also emerge at about this time, e.g. obligatory subject control (spec of VP occupied by PRO), and raising (spec of VP occupied by *t*). These syntactic phenomenon are not attested prior to this period because they rely on the spec of the upper VP, and that was not generated in OE or early ME.

7. Conclusion

Our analysis attributes the rise of ECM structures in LME to the change in representation assigned to nonfinite clauses by first language learners. Like Lightfoot (1979) we assume that learners attempt to make a one to one match between form and representation, and that this led them to assign different representations to finite and nonfinite clauses in OE, but similar representations to finite and nonfinite clauses in LME. We also suggest that the rise of obligatory *to* infinitivals was a due to the learners acting on the principle of economy in (18). In this paper we did not take a position on the means by which ECM verbs transmit case to the lower clause subject. This perhaps could be handled through a "case-transmission" analysis whereby *to* transmits government and case to the subject, as that suggested in Lightfoot (1991). We leave that to future research.

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